The JOURNAL *of* GEOGRAPHY

Copyright 1942, by the National Council of Geography Teachers

VOLUME XLI JANUARY, 1942 NUMBER 1

WHAT NEXT IN GEOGRAPHY?*

ELLSWORTH HUNTINGTON
Yale University

Geography is changing rapidly. This does not mean that Hitler is altering the political boundaries of Europe. In the long view that is only a minor incident. It means that the science of geography is still evolving. I hope that in the near future it will change in at least four chief ways. First, geography must swing back to a more perfectly rounded type in which man and nature are always considered together, each influencing the other. Second, we need a more clear-cut emphasis upon the idea that distribution upon the earth's surface—the kind of facts shown by maps—is the central theme of geography. Third, the geography of the future will, I believe, ascribe quite as much importance to human differences as to natural resources. In other words, we shall face and ultimately solve, the problem of how far man's physical and psychological status, as well as his cultural status, varies from one part of the world to another in direct or indirect response to the geographical surroundings. Fourth, political geography will come into its own. It will be taught as widely as economic geography, and historians will really utilize it instead of merely paying it lip service.

PHYSIOGRAPHY AND ONTOGRAPHY

The need for more emphasis on the physical side of geography is widely recognized. A generation or two ago William Morris Davis of Harvard started a vigorous movement toward the teaching of physical geography in American high schools and colleges. This type of geography did not satisfy the needs of the average student. Hence, it almost disappeared except in the geology departments of colleges. Its place was taken by human geography, especially the economic phases of that subject. Many geographers over-

* Address delivered at the New England Geographical Conference, May 2, 1941.

did the matter. Some even said that unless man is specifically included in a given problem it is not geography. Many thought that the description of a factory was geography. In correcting this extreme view we need not become as geological as Professor Davis, but we must heed that great geographer's insistence on the reciprocal nature of physiography and ontography. It is regrettable that geographers do not use these two terms more commonly, for we need more emphasis upon the dual nature of our subject.

According to Davis, physiography includes the entire body of facts and principles pertaining to the geographic distribution of the inanimate portion of our natural environment. It has three parts based on three envelopes which surround our globe like the skins of an onion. The rocks form an envelope wherein we study the distribution of land forms, soils, and minerals. The aqueous envelope leads to the study of oceanography, lakes, rivers, springs and groundwater in general. The atmospheric envelope is the basis for the study of climate and weather. Each envelope, whether composed of rocky materials, water, or air, can be studied chemically, physically, artistically, or in various other ways. Each, however, belongs to geography only when studied in respect to its variations from one part of the earth to another. Each is an appropriate subject for geographic study even when taken alone. If our geographic science is to be sound, we must base it on this broad kind of physiography more fully than has been done of late.

Ontography, as defined by Davis, is the geography of living beings, for such is the meaning of the Greek word, "ontos." It, too, has three divisions. Plants, animals, and man are the basis for three types of ontographic geography just as distinct as the physiographic types based on rocks, water and air. Nevertheless, the basic laws of all three ontographic types are essentially the same. Additional laws, however, keep coming into play as we pass from plants to animals and man, and then as we pass onward from the simplest savagery to the most complex civilization. The nature, the unity, and the progressively greater complexity of these laws will assuredly become more and more evident as geography becomes more mature. Each of the three organic types, especially man, not only is influenced by the three physiographic types, but in turn exerts its own modifying influence upon them and upon the organic types. We must appreciate more fully the importance and individuality of each of the six types of geography, whether physiographic or

ontographic. At the same time, we must appreciate how constantly each influences the others so that the effect of man upon physiography and especially upon the natural fauna and flora is as great as their effect upon him. Otherwise we cannot develop geography to its highest levels scientifically, or to its greatest uses practically.

LOCATIONAL GEOGRAPHY

The second main line along which great progress may soon be expected is plain, old-fashioned locational geography. What sense is there in talking about Thailand to people who do not know whether it is east, west, or south of Burma, or whether its latitude is 5° or 30°. In our attempts to make geography interesting and popular, we have been too ready to forget that every science requires hard, solid work, which often involves considerable exercise of memory. We expect chemistry students to remember the main facts as to the various elements, and it is equally necessary that geography students remember the main facts of location. No fact is fully developed in its geographic aspects unless we understand its location in respect to various other types of facts, both physiographic and ontographic. Only thru such comparative studies of location can we reach the main objective of geography in the form of regional descriptions illustrating the laws which govern the relative distribution of the facts of physiography and ontography.

SIGNIFICANCE OF HUMAN DIFFERENCES

The third great line of future change in geography needs fuller statement than the other two, because it is as yet largely unrecognized. The general principle involved is that human beings and their qualities are more important than natural resources. Few people would question this, but in actual practice it is rarely recognized. In almost any geographical textbook count the pages devoted to differences between the people of one region and another, then count those devoted to differences in relief, soil, minerals, plants, animals, transportation, commerce and industries. Yet in the long run the quality of the people is more powerful than natural resources in influencing civilization and history. From the human standpoint the contrasted energy and activity of the Finns and the Amazonians is certainly one of the major differences between Finland and Amazonia. By Amazonians we mean the sedentary population of mixed Portuguese, Indian, and Negro origin in the lowlands of the Amazon basin. The Finns work far harder and

probably more intelligently than the Amazonians. This in turn influences a host of other differences in productivity, trade, transportation, the distribution of cities and so forth. Nevertheless, most geographers let the matter pass with the mere statement that the Finns are industrious and efficient, whereas the Amazonians are shiftless and inefficient. A reference to racial differences may be included, and a few words as to climate. The quality of the people is dismissed with a few vague generalities; whereas the vegetation and relief are described in sharp clear strokes that carry conviction.

It is easy to point out reasons for our failure in this respect. The chief reason is simply lack of knowledge. We know very little as to how much of the difference between two such groups of people is innate, and how much due to environment, both physical and cultural. Old ideas as to innate racial differences have been greatly modified of late, but there is not a shred of evidence that all major groups of people are innately alike in intellectual and temperamental qualities, any more than in outward physique. Such an idea is perhaps excusable as a reaction against the absurd Germanic claims of Nordic and "Aryan" supremacy, but that does not make it any less fallacious. The correct attitude for the geographer would seem to be to recognize, as he usually does, that the Finns and Amazonians are different, inwardly as well as outwardly, and then to measure the differences so far as he is able, and discover their causes. We may find, perhaps, that the average Finn does twice as much work per hour as the average Amazonian, and works three times as many hours in the course of the year. I have no idea what the real figures are, but these will do for illustration.

Foundations of National Character

The causes of such a difference are of three main types. One consists of cultural conditions which give rise to a definite set of mores, or customs, so that a Finn must attain a certain standard of living in order to retain his own self respect. Therefore, he is ashamed to be idle. The Amazonian standard of living, on the contrary, is such that the people feel pride rather than shame in being idle. A second type of causes comprises physical conditions which give the Finns more vigorous bodies than the Amazonians. The third consists of innate biological traits which cause the two groups to be born with a certain amount of difference in physical vigor, mental aptitudes, temperament, and capacities for develop-

ment. The effects of the three types of factors are intimately intermingled. For example, because the standard of living in Amazonia demands only a little work, the average man there does not get so much exercise as the Finn, probably much less than he needs for good health. Thus his bodily vigor is diminished and his inclination to work is lessened.

Among the factors that directly influence bodily vigor climate is one of the most obvious. Damp tropical heat is especially effective in lessening the *inclination* for work. It also diminishes the actual capacity for work, but this is probably not so important as the way in which hot weather, especially if damp, makes people feel inclined to sit around and say, "What's the use of working? We'll get along all right." A similar effect is produced by diet. The mere fact that less food is needed in a warm climate than in a cold one fosters the Amazonian tendency toward lassitude. The further fact that food can be procured at all seasons, but cannot easily be kept, makes it unnecessary for the Amazonian to exert himself steadily for months at a time in order to raise and store away enough food for a long period of scarcity. Of course the Finn suffers from inactivity during the cold winter, but he has his animals to care for, and the mere task of cutting firewood, let alone the work of lumbering keeps him fairly active.

The chemical aspect of diet may be more important than either its amount or the need of storing up food for seasons of scarcity. In recent times the world has learned two great lessons about food. One is that even the most abundant diet will not supply proper nutriment unless it contains the right proportion of fats and proteins in comparison with carbohydrates. The second is that failure in this respect, altho lamentably common, is by no means so widespread or disastrous as deficiency of the protective foods, namely milk, meat, eggs, fresh vegetables and fruit. Finland is far from being perfect in this respect, but at least it has plenty of cattle and milk, and a fair amount of cabbage as well as rye and wheat. The Amazonians, on the other hand, live largely on corn and beans. They get enough carbohydrates and protein, but by no means enough fats, vitamins, and acids. In addition to this the quality of such food as they do eat appears to be lowered by a deficiency which is common in tropical countries. Tropical soils as a whole tend to be badly leached because weathering and the solution of the soluble plant foods take place rapidly. Hence potash, phos-

phorus, iron, and other minerals tend to be scarce in tropical foods. Domestic animals suffer from serious diseases because of such lacks, and man suffers in the same way. Glacial soils and fresh marine deposits, such as are mainly cultivated in Finland, are less likely to have such deficiencies. Thus, altho actual analyses of Finnish and Amazonian diets are not available, it seems highly probable that a poor diet is an important factor in making the Amazonians less vigorous than the Finns. Lack of vigor, however induced, reacts to make the diet still worse because anemic people do not and cannot make much effort to improve their food.

Another factor of vast importance in determining the vigor of contrasted countries such as Finland and Amazonia, is parasitic diseases. We know very well that when a malady such as malaria, pellagra, or hookworm disease is eliminated, people show a marked gain in energy. Hence they work harder, attain a higher standard of living, and get a better diet. An improvement in health thus arises not only thru freedom from disease, but from greater physical activity and better food. This renders the people less susceptible to a return of the diseases and to the enervating effect of heat. These conditions in turn cause people's ideals as to the desirability of work to change. Efforts to improve sanitation and diet require less will-power than before because people feel more vigorous. Thus the social system gradually changes.

From all this it is clear that what we often call national character is the result of a complex mixture of influences which act and react upon one another and upon the qualities, whatever they may be, with which people are born. We cannot here trace these complicated interactions further. Our present object is merely to point out the failure of geographers to make sufficient study of the basic conditions which render the people in one region more efficient than in another. Geographers alone cannot solve the problem of national character, but they can join with others in its solution, and they can emphasize the regional contrasts which are apt to be neglected by non-geographers. The problem of national character, especially of the part played in it by physical vigor, offers one of the strongest challenges to the geographer. If we knew as much about the causes and regional distribution of people's physical vigor and inclination toward work as we know about the location and operation of coal mines, for example, geography would make a wonderful new step of progress.

FUTURE OF POLITICAL GEOGRAPHY

This brings us to the problem of political geography. Geographers have always claimed that the course of history has been greatly influenced by geographic environment. Nevertheless, the great majority of historians have gone serenely on their way with little knowledge of geography aside from the location of the places with which they deal. Only a few, such as A. J. Toynbee in *A Study of History,* have systemmatically tried to integrate geography and history. Some, to be sure, have emphasized individual geographic aspects of geography, as Turner did in his study of the effects of the frontier. Some geographers, such as Miss Semple, have also written good books on special phases like relief and transportation, and recently textbooks on Political Geography have begun to appear. Nevertheless, as yet no country's history has been written in such a way that geography and the general march of events are fully correlated. One reason for this is that no one has yet looked at the problem from a sufficiently broad point of view. Geographers, historians, archaeologists, economists and others have given us valuable studies of the way in which history has been influenced by the relief of the lands, by location in respect to the sea, by climatic changes, by frontiers and migration, by the search for minerals, by plantation products and colonies, by racial character, by unity or diversity of language and customs, and in other ways. What we need now is a study which impartially brings all these factors into their proper relation to the stream of history, and which also adds at least two other factors. One of these is physical vigor and its variations from region to region, as already described, together with its variations from one period to another. The other is the innate quality of the people, their inherited physical and mental traits as determined by exact studies.

In these days it is almost dangerous to discuss problems which are even remotely racial in character. Nevertheless, it is of the utmost importance that we should settle the question of how far the character and ability of a nation, or of groups within a nation, depend on innate capacities. This, of course, is a problem for many other branches of knowledge as well as geography. A brief comparison of Switzerland and Japan will illustrate some of the geographic phases of the problem without attempting to solve them. Everyone recognizes that the Swiss and the Japanese differ widely in national character. No one knows how far these differences are

due to training and culture, to historical development, to geographical environment, or to innate capacities and aptitudes. I shall make no attempt to evaluate these factors. I shall merely point out a few facts and raise one or two questions which illustrate certain phases of what we ought to know in order to make a valid correlation of geography and history.

According to the most carefully corrected statistics Switzerland's index of health and thus of physical vigor is 93 in comparison with 100 for New Zealand, and 92.5 for the whites in the United States. The figure for Japan drops to only 69. This puts Japan half way toward the low level of India, 45, but probably well above China, for which no data are available. The question for the historian is whether the serious lack of physical vigor suggested by so low an index has anything to do with the way in which Japan hesitates to provoke a strong western power such as England, holds its own with Russia where the index of health is practically the same (70), and tries to lord it over less active people such as the Chinese. If the Japanese were as vigorous as the New Zealanders, where would they stand among the nations? The question for the geographer is how far Japan's poor health is correlated with climate, diet, overpopulation and other geographic conditions. The extreme heat and humidity of the summer, with the consequent high rates of illness and death, are certainly a weakening factor in Japan. Over-population and climate together have a disastrous effect upon diet which is another reason for physical weakness. Data published by the League of Nations, the Food Research Institute of Leland Stanford University, and Colin Clark enable us to prepare index numbers showing how large an amount of protective foods(meat, milk, eggs, fresh vegetables, and fruits) each nation enjoys in comparison with New Zealand which is the best fed country. Japan's index in only 29 compared with 100 in New Zealand, 92 in the United States, and 86 in Switzerland, but it is better than 26 which is the index in the U.S.S.R., and 17 in China. It is almost impossible for Americans to realize how much their energy and their standard of living would be reduced if they had to live always on so poor a diet.

Looking at the matter in another way we find that when all sorts of goods are reckoned at the same prices everywhere the national income per person in Japan amounts to only $91 compared with $541 in the United States and $477 in Switzerland. On the same

scale poor China drops to $51. How much does this have to do with the fact that when Mark Jefferson made his study of patents issued in 1925 he found that Switzerland took out about ten times as many as Japan in proportion to the population?

We might go on with facts and questions like these indefinitely, but there is time for only one more item. How much has migration had to do with the advantages which Switzerland enjoys compared with Japan? Japan has received practically no immigration for 1500 years. Switzerland for hundreds of years has been a refuge for people who were politically or religiously oppressed elsewhere. Such people tend to think for themselves, and their descendants are likely to be adaptable, energetic, and inventive. Thus there is a real possibility that the Swiss have been slowly becoming more competent biologically, as well as culturally, whereas the Japanese have suffered no such change.

Here we must leave the matter. In the next few decades geography will doubtless strike a better balance between physiography and ontography, and we shall hear less discussion of what geography is and more of what are its principles. Our students, we may hope, will learn where places are located as well as what the places mean geographically. I hope, too, that we shall at last realize that man and his differences are even more important than differences in relief, soil, climate, vegetation and minerals. It will require the cooperation of many sciences before we can solve the problem of the relative parts played by biological inheritance, physical environment, and cultural environment in giving rise to national character. It will require still more work to find out how far the quality of the human material of a country changes by reason of disease, diet, migration, industrial development, or other factors. Nevertheless, we may expect good progress along all these lines. Only as we make such progress and appreciate the supreme importance of the human element can we hope to have a well rounded political geography and a well balanced coordination of geography and history.

A BIBLIOGRAPHY OF ARTICLES RELATING TO LATIN AMERICA PUBLISHED IN THE JOURNAL OF GEOGRAPHY VOLUMES I TO XL (1902-1941)

A. CURTIS WILGUS
The George Washington University, Washington, D.C.

Interest in Latin America today deserves to be promoted and assisted in every way. To this end it is of importance to call to the attention of investigators and students available material in this field not only in book form but in the form of periodical articles, much of which has a high degree of value chiefly because it is based upon careful and full research and is written in a scholarly fashion. Of special interest at the moment are articles found in periodicals dealing with geography and geology if for no other reason than because of the bearing on our economic relations with the countries to the south of us. Among the periodicals which have continually devoted attention to the Latin American states is the JOURNAL OF GEOGRAPHY, which, because of its emphasis upon teaching in the field, contains articles which are most timely now.

The following titles of articles have been taken from the magazine since its inception in January, 1902. They are classified under three headings with appropriate sub-headings. Only original articles have been listed; notes, news, editorials, extracts of articles published elsewhere, etc., even if they deal with Latin America, have been excluded. It is hoped that this listing may serve as a workable index for persons wishing a ready reference to geographical material concerning Latin America.[1]

I. Individual Countries

1. Argentina

Chase, Lenox E., A Study of How to Teach the Economic Geography of Argentina, XXXI, No. 3 (March, 1932), 128-32.

Davis, Jehiel S., Catamarca, the Arizona of Argentina, XIX, No. 9 (December, 1920), 327-35.

[1] Three somewhat similar types of lists compiled by the same writer have preceded this one: "Index of articles relating to Hispanic America in the *National Geographic Magazine*, vols. I-XLI, inclusive (1888-1932)" in the *Hispanic American Historical Review*, XII, no. 4 (November, 1932); "List of articles relating to Hispanic America published in the periodicals of the American Geographical Society, 1852-1933, inclusive" in *Ibid.* XIV, no. 1 (February, 1934); and "List of articles relating to Hispanic America in the *Geographical Journal*, 1893-1934, inclusive" in *Ibid.* XIX, no. 1 (February, 1939).

Freeman, O. W., The Geographic Provinces of Argentina, XXIV, No. 8 (November, 1925), 300-13.

James, Preston E., The Process of Pastoral and Agricultural Settlement on the Argentine Humid Pampa, XL, No. 4 (April, 1941), 121-37.

2. Bolivia

Blanchard, W. O., Foreign Trade Routes of Bolivia, XXII, No. 9 (December, 1923), 341-45.

Bowman, Isaiah, The Valley of Eastern Bolivia, XI, No. 4 (December, 1912), 114-19.

3. Brazil

Barber, Maude E., A Project on Brazil, XXI, No. 5 (May, 1922), 169-74.

Bowman, Isaiah, The World's Great Rivers. The Amazon, IX, No. 2 (October, 1910), 36-38.

Cameron, C. R., Maté: An Important Brazilian Product, XXIX, No. 2 (February, 1930), 54-70.

Coxe, George R., Brazil's Foreign Trade, XXII, No. 8 (November, 1923), 318-23.

Gauld, Charles A., Brazil Takes a Census, XL, No. 4 (April, 1941), 138-44.

Goode, J. Paul, The Rio Theodoro, Colonel Roosevelt's New River, XIV, No. 1 (September, 1915), 7-9.

Haas, W. H., The Coffee Industry in Brazil, XXVIII, No. 2 (February, 1929), 41-57.

Haas, W. H., Studies in the Geography of Brazil, XXII, No. 8 (November, 1923), 285-317; No. 9 (December, 1923), 325-35; XXIII, No. 4 (May, 1924), 161-80; XXIV, No. 3 (March, 1925), 83-93; XXIV, No. 5 (May, 1925), 165-83.

James, Preston E., Forces for Union and Disunion in Brazil. An essay on political geography, XXXVIII, No. 7 (October, 1939), 260-66.

James, Preston E., Notes on a Journey up the Rio Doce, Brazil, XXXII, No. 3 (March, 1933), 98-107.

James, Preston E., The Upper Paraná: A Problem in South American Geography, XXII, No. 7 (October, 1923), 245-56.

Kelton, Mary E., An Outline Lesson on Brazil, XX, No. 2 (February, 1921), 67-74.

Thralls, Zoe A., The Cattle Industry in Brazil, XIX, No. 7 (October, 1920), 278-80.

Tower, Walter S., The World's Great Rivers—The Paraná, XI, No. 4 (December, 1912), 119-126.

Uttley, Marguerite, Brazil's Place in the Rubber World. A Problem in Upper Grade Geography, XXII, No. 9 (December, 1923), 336-41.

Ward, Robert DeC., Climate and Coffee in Brazil, X, No. 1 (September, 1911), 16-17.

Ward, Robert DeC., The Meteorological Interest of a Voyage to Brazil, X, No. 5 (January, 1912), 152-59.

Weller, Annie L., A Lesson on Brazil. Junior High School and Upper Grades, XIX, No. 7 (October, 1920), 275-77.

Wood, Mabel V., The Paraná Way to the Iguazu Falls, XXX, No. 5 (May, 1931), 205-18.

4. Chile

Budd, Emily A., Chile, XIV, No. 2 (October, 1915), 56-57.

McConnell, W. R., The Nitrate Industry of Chile, XVI, No. 6 (February, 1918), 211-14.

McLaughlin, Marie, Study Guide for the Nitrate Regions of Chile, XXXI, No. 6 (September, 1932), 237-44.

The Valparaiso Earthquake, V, No. 7 (September, 1906), 301.

5. Colombia

Beard, Garnet C., Colombia: A Cross-word Puzzle, XXXVIII, No. 4 (April, 1939), 169-71.

James, Preston E., The Transportation Problem of Highland Colombia, XXII, No. 9 (December, 1923), 346-54.

Pruitt, Fredonia M., The Coffee Industry of Colombia, XXXV, No. 2 (February, 1936), 68-72.

6. Costa Rica

Bergsmark, Dan, Geographic Provinces of Costa Rica, XXVI, No. 8 (November, 1927), 307-13.

Platt, Robert S., A Cross Section of Central America in Costa Rica, XXII, No. 3 (March, 1923), 95-100.

7. Cuba

Blanchard, W. O., Cuba, XVI, No. 3 (November, 1917), 108-09.

Lestina, Mildred Letitia, Tobacco Production: San Juan-San Luis, Cuba, XXXIX, No. 5 (May, 1940), 173-82.

Lestina, Mildred Letitia, Vuelta Abajo, Cuba: A Study of Its Tobacco Industry, XXXIX, No. 2 (February, 1940), 45-55.

8. Ecuador

Foster, Alice, The Guayaquil Lowland, XXXVII, No. 6 (September, 1938), 213-26.

9. Guatemala

Atwood, Wallace W., The Highways and Byways of Guatemala, XXXII, No. 7 (October, 1933), 265-78.

Bratton, Sam T., El Pacayal: A Coffee Finca in Guatemala, XXXVIII, No. 2 (February, 1939), 45-50.

10. Honduras

Bengtson, Nels A., The Resources of Honduras, XXIV, No. 4 (April, 1925), 125-39.

11. Mexico

Casto, E. Ray, Mexico: A Cross-word Puzzle, XXXIX, No. 8 (November, 1940), 329-30.

Crofts, Alfred, Off the Beaten Path to Chihuahua, Mexico, XXXVI, No. 6 (September, 1937), 235-39.

Dicken, Samuel N., Corn and Wheat in Mexico's Changing Economy, XXXVIII, No. 3 (March, 1939), 99-109.

Dicken, Samuel N., Galeana: A Mexican Highland Community, XXXIV, No. 4 (April, 1935), 140-47.

Foster, Alice, "Sisal Production in Semi-arid Karat Country of Yucatan, XXIX, No. 1 (January, 1930), 16-25.

Hileman, Mary L., Adios for Mexico. A Social Studies Unit for the Third Grade, XXXVIII, No. 9 (December, 1939), 359-63.

Lemert, Ben F., Guadalajara, Mexico, XL, No. 5 (May, 1941), 173-80.

Lemert, Ben F. and Rose V., An Hacienda in Mexico, XXXV, No. 9 (December, 1936), 343-50.

Lemert, Ben F. and Rose V., Iguala: A town in Southwestern Mexico, XXXVI, No. 7 (October, 1937), 269-77.

Lemert, Ben F. and Rose V., Mexico: Acapulco, a Pacific Port of Mexico, XXXV, No. 2 (February, 1936), 41-46.

Lemert, Ben F. and Rose V., Mexico: The Cotton Textile Industry, XXXV, No. 4 (April, 1936), 143-46.

Lemert, Ben F. and Rose V., Mexico: The Iron and Steel Industry, XXXV, No. 5 (May, 1936), 199-202.

Lemert, Ben F. and Rose V., Mexico: Rural Life in the Mountains Between Mexico, D. F. and Acapulco, XXXIV, No. 9 (December, 1935), 357-63.

Lemert, Ben F. and Rose V., Mexico: Rural Life in the Northeastern Coastal Plain, XXXIV, No. 8 (November, 1935), 318-24.

Lemert, Ben F. and Rose V., Mexican Urban Life, XXXV, No. 1 (January, 1936), 1-7.

Lemert, Ben F. and Rose V., Popocatepetl, XXXVII, No. 5 (May, 1938), 188-95.

Lemert, Ben F. and Rose V., The United States and Mexico, XXXIV, No. 7 (October, 1935), 261-66.

Marshall, William B., Useful Products of The Century Plant. A Lesson on Mexico, I, No. 1 (January, 1902), 6-17.

White, C. Langdon and Edwin J. Foscue, Henequin, the Green Gold of Yucatan, XXXVIII, No. 4 (April, 1939), 151-55.

12. Nicaragua

Platt, Robert S., Nicaragua. Revolution and Intervention, XXVI, No. 4 (April, 1927), 123-29.

13. Panama

Church, G. E., The Republic of Panama, III, No. 3 (March, 1904), 101-11.

Everett, Estella, The Struggle to Render the Panama Zone Healthful, XXVII, No. 5 (May, 1928), 189-98.

14. Peru

Whitbeck, R. H., The Coast Waters and the Coast Lands of Peru, XXV, No. 2 (February, 1926), 41-52.

15. Puerto Rico

Cromwell, Arthur D., Observations in Porto Rico, XII, No. 9 (May, 1914), 314-16.

Platt, Robert S., Porto Rico, Jamaica, and Martinique, XXII, No. 4 (April, 1923), 132-39.

Whitbeck, Florence, Geographic Influences in the Development of Porto Rico, XXV, No. 1 (January, 1926), 8-20.

Whitbeck, R. H., The Sugar Industry of Porto Rico, XXIX, No. 9 (December, 1930), 363-71.

Whitbeck, R. H., Unhappy Puerto Rico, XXXIII, No. 5 (May, 1934), 172-78.

16. Uruguay

Lemert, Ben F., Uruguay and the Uruguayans, XXXIII, No. 8 (November, 1934), 289-303.

Whitbeck, R. H., Little Known Uruguay, XX, No. 5 (May, 1921), 163-64.

17. Venezuela

Béndrat, T. A., Ciudad Bolívar. The Key to the Interior of Venezuela, VIII, No. 10 (June, 1910), 218-22.

II. General

1. South America

American Packing Houses in South America, XVI, No. 2 (October, 1917), 46.

Barber, Maude E., An Avenue of Approach to the Study of South America, XXIII, No. 6 (September, 1924), 238-44.

Barr, Glenn, South American Place Names, XXX, No. 2 (February, 1931), 79-82.

Brown, Robert Marshall, Map Reading, IV, No. 7 (September, 1905), 273-88.

Casto, E. Ray and Garnet C. Beard, The A.B.C.'s of the A B C Countries, XXXVIII, No. 3 (March, 1939), 112-14.

Hartshorne, Helen R., Interest-stimulating Device. Crossword Puzzle. South America, XXX, No. 8 (November, 1931), 348-49.

James, Henry F., Harbors of South America, XIV, No. 2 (October, 1915), 43-48.
James, Preston E., The Geographic Setting of the Tacna-Arica Dispute, XXI, No. 9 (December, 1922), 339-48.
Johnson, Emory R., The Trade and Industries of Western South America, I, No. 1 (January, 1902), 25-35; No. 2 (February, 1902), 51-62; No. 3 (March, 1902), 109-22.
Newman, M. Lillian, Questions on South America, IX, No. 5 (January, 1911), 130.
Rosey, C. J., Some Points in the Geography of South America, XII, No. 3 (November, 1913), 74-79.
Roorbach, G. B., The Food Surplus of South America Available in Time of War, XVI, No. 4 (December, 1917), 129-34.
Schoewe, Walter H., Glaciers and Glaciation of South America, XIV, No. 2 (October, 1915), 49-54.
Tower, Walter S., The Andes as a Factor in South American Geography, XV, No. 1 (September, 1916), 1-8.
Trade of the United States with South America, 1911, X, No. 6 (February, 1912), 201-02.
Williams, F. E., Mineral Wealth of South America—Past and Present, XVI, No. 2 (October, 1917), 51-57.

2. West Indies

Booy, Theodoor de, The Less-known Regions of the West Indies, XVIII, No. 2 (February, 1919), 56-62.
Corfield, George S., Netherlands West Indies: Life and Work, XL, No. 8 (November, 1941), 281-90.
Platt, Robert S., Cuba, Haiti and Santo Domingo, XXII, No. 1 (January, 1923), 20-26.

3. Central America

Crewson, Walter S., Suggestions for Teaching a Phase of the Banana Industry of Central America, XXXVII, No. 4 (April, 1938), 164-67.

4. Panama Canal

The Panama Canal, XVII, No. 1 (September, 1918), 36.
Smith, J. Russell, The World Carriers and the Panama Canal, XI, No. 7 (March, 1913), 227-31.
Whitbeck, R. H., Through the Panama Canal, XIX, No. 6 (September, 1920), 223-32.

5. Latin America as a Whole

Bailey, E. H. S., Food Products Originating in Latin American Countries and Their Importance in the World Market, XXVIII, No. 5 (May, 1929), 207-11.
Carlson, Fred A., Geography in Inter-American Cooperation, XL, No. 5 (May, 1941), 161-68.
Casto, E. Ray and Oscar W. Dotson, The C's of Latin American Commerce, XXXVII, No. 6 (September, 1938), 247-49.
Finch, Grant C., The Tropical Zone from the White Man's Standpoint, XXII, No. 2 (February, 1923), 60-66.
Huntington, Ellsworth and Sumner W. Cushing, The Nature and Possibilities of Tropical Agriculture, XVIII, No. 9 (December, 1919), 341-52.
Jones, Chester Lloyd, Supplying the World's Coffee, XIV, No. 5 (January, 1916), 129-35.
Landon, Charles E., Silk Production in Latin America, XXVIII, No. 7 (October, 1929), 279-85.
Miller, George J., Some Problems in Western Hemisphere Solidarity, XL, No. 3 (March, 1941), 109-15.
Peculiarities in the Export Trade of Latin America, XII, No. 2 (October, 1913), 64.
Platt, Robert S., Latin America in World Affairs, XL, No. 9 (December, 1941).

Visher, Stephen S., Some Effects of Tropical Cyclones, XXIV, No. 4 (April, 1925), 139-50.
Walther, E. Curt, Suggestions for the Study of Latin America Based Upon Our Trade Relations, XIX, No. 2 (February, 1920), 41-55.
Ward, Robert DeC., The Characteristics of the Zones. I—The Tropics, V, No. 7 (September, 1906), 302-19.

III. Miscellaneous

Atwood, Wallace W., The Second General Assembly of the Pan American Institute of Geography and History, XXXV, No. 1 (January, 1936), 33-34.
Pan American Day—April 14, XXXIX, No. 2 (February, 1940), 84-85.
Washington, Mary J., The Pan-American Exposition. A Geography Project, XXI, No. 7 (October, 1922), 266-73.

NATIONAL SELF-SUFFICIENCY

A Project Study Based on the Strategic and Critical Materials

OVID MILLER MCMILLION
Wilson Teachers College, Washington, D.C.

INTRODUCTION

A teacher often desires to have his students accomplish a term project as a supplement to the regular course. Such a study as is suggested here is based on the strategic and critical materials listed by the Army and Navy Munitions Board. Discretion as to the appropriate course or courses in which it may be used satisfactorily is left to the individual teacher.

Some of the objectives of such a study might well be:

1. To acquaint the student with the strategic and critical materials and their locations.
2. To develop an appreciation of the defense program of the United States.
3. To create a clear picture of the national and international problems in respect to specified vital resources.
4. To launch the student on a project designed to supplement the course study from both the standpoints of interest and information.
5. To give the student practice in semi-independent research and organization of material.
6. To present to the student an opportunity and a challenge to search and compile proper materials, to interpret them, and then to defend his conclusions.

This project "stretches" the traditional theme of self-sufficiency for continental United States and deals with a type of practical self-sufficiency extending beyond the continental limits. Under such a plan the United States would pursue normal friendly trade relations with other nations in times of peace, so that its citizens

would not be unnecessarily stinted in the use of the world's commodities, and yet be assured of the best military supplies the world affords in the event of a major emergency.

In a study of this type, the list of materials must necessarily be limited. Thanks to the Army and Navy Munitions Board, a satisfactory list of strategic and critical materials has been listed. Some of the items may readily be checked off with very little consideration, inasmuch as the items themselves or the items used in their production are found in the United States or its possessions. Some of the materials were placed on the list for purposes of procurement, or temporarily, until adequate desired production in the United States could be developed.

Many commodities which are used in the United States today and for which we might have to use substitutes in case of a major emergency are not included in the list adopted by the Army and Navy Munitions Board. However, such commodities as bananas, coffee, and cacao are not included on the list because substitutes could be used for these without the lowering of the national standards from the standpoints of health, morale, and military set-up.

This study hinges on materials which are very vital to the efficient running of a military machine. Such practical substitutes as nylon hosiery for silk hosiery might well be considered in selecting appropriate areas for control by the United States. However, any questionable substitutes, present or potential, should, perhaps, not be considered in estimating consumption and designating areas.

Such a scheme as proposed here, used as the "Leitmotif" in a scheduled course, may prove a considerable incentive to learning, even if it does possibly appear somewhat impractical in its potential application. The writer has no desire to be labeled an "imperialist"; nor is there an effort to direct the mind of the student along lines of imperialism. However, it is believed that a consideration of materials along the lines indicated may greatly aid in the proper training of students.

Such an experience in research, compilation, interpretation, and defense of conclusions drawn should prove stimulating, interesting, and instructive. The suggested study might well be followed by other studies, such as the civilian and military uses of the selected materials, the progress in finding substitutes for them, or the rendering of them more readily available.

POSSIBLE PROBLEMS TO BE ENCOUNTERED

Numerous problems may arise in connection with such a project. Satisfactory settling of these will call for clear thought on the part of the teacher and students in order to encourage progress in the study. Some of the possible problems which might arise are indicated.

(1) Statistics relative to the same item do not always correspond when gathered from different sources. That which appears to be the most reliable source should be used. (2) One must always realize the limitations of approximations. They are frequently quite vague and are often concerned with quantity rather than quality. (3) It is sometimes difficult to gather figures on the amount of a given material exported in manufactured form, often in combination with other materials, in order to arrive at the net consumption figure. Perhaps no attempt should be made to do so, unless the figures are clearly stated in a reliable reference. (4) It is also difficult, sometimes, to determine how much of a commodity used in a given year came from old stocks and how much came from current production. (5) Sometimes a country re-exports a product, and its figures of actual home production in terms of that article may be somewhat questionable as a result. (6) The availability of figures may well determine whether comparable figures are to be used in terms of percent, tons, or pounds, etc., in the study of each item. (7) There is also the question of quality versus quantity or types of production. (8) The question of unmined reserves may well be scouted in this preliminary investigation and the study based largely on current production, except in cases where it is fairly evident that certain materials could soon be produced to satisfy an increasing demand. (9) Perhaps only the amount of a commodity saved by actual conservation, re-use, etc., in a given year should be considered in arriving at a net consumption figure, rather than what might possibly be conserved in the future.

Insofar as possible, it might be well to decide on a given year for the entire class to base its figures on. This renders comparisons more understandable for the group as a whole. The year 1938, the year preceding the outbreak of the general European war, is suggested as an appropriate one.

STEP ONE

Each student may begin his study by alphabetizing his list of materials on separate sheets of paper. An indexed notebook may prove of value for convenience and ready reference. While examining a reference for one item, the student may discover appropriate information to record for another item in his list. In examing the references, he should constantly be on the alert for certain items for comparison. A minimum of statistics for each item may well be:

1. Percentage of the world's production of each item accounted for by each producing political unit.
2. Percentage or amount of the world's production accounted for by consumption in the United States.

STEP TWO

After the student has collected appropriate figures, he determines, on the basis of his figures, the difference between the net consumption of the United States and the total production in the United States in the case of each commodity.

STEP THREE

The student is now ready to make use of an outline map of the world. He selects a minimum of appropriate areas, the total of which would render the United States independent in terms of the various materials under consideration. Using appropriate colors or symbols, he prepares the map for presentation to the group. In developing his potential world map of the United States, he should consider:

1. Areas over which control could be obtained with least disturbance of the present world political organization (alternatives of force, protective custody, concessions, guarantees, annexation, alliances, etc., may well be considered).
2. Areas, which, insofar as possible, would be socially and politically agreeable as a part of a greater United States.
3. Areas which would be most easily defensible. Attention might well be given to grouping areas and to the development of possible "power lines."
4. Proximity of the United States to strategic and critical materials located within the boundaries of friendly nations (Canada, for example).
5. The combination of resources in a given area.
6. The possibilities of storage for a period of years in the case of those items of which we need very little, but are unable to produce at any price. This may cancel the need of taking over certain large political divisions.
7. The possibilities of storage for the necessary period of years in the case of certain items which the United States could produce at a price but the production of which it could not immediately develop to the point of self-sufficiency.

STEP FOUR

The concluding step in the project constitutes a real challenge for the student. He presents his world map to the class and defends his choice of areas. This phase of the project may be handled in a number of ways, depending on such considerations as the size of the class and the desires of the teacher and the students.

A small class may well gather about a table and lay its maps out for a good view. The chairman may conduct the discussion by considering one material at a time, each student defending or justifying any selection of area. Students well prepared for these periods are almost certain to challenge the wisdom of selections in specific cases. Another method is to have each student present his map separately and have the group discuss it with him. He should be able to justify all selections of areas. In a large class, members may work in groups in the preparation of their materials, each group presenting its conclusions to the class as a whole.

THE STRATEGIC AND CRITICAL MATERIALS

In March, 1940, the Army and Navy Munitions Board defined "Strategic" materials and "Critical" Materials:

> Strategic materials are those essential to national defense, for the supply of which in war dependence must be placed in whole, or in substantial part on sources outside the continental limits of the United States; and for which strict conservation and distribution control measures will be necessary.
>
> Critical materials are those essential to national defense, the procurement problems of which in time of war would be less difficult than those of strategic materials either because they have a lesser degree of essentiality or are obtainable in more adequate quantities from domestic sources; and for which some degree of conservation and distribution control will be necessary.

The list for October 1, 1941, follows:

Strategic	Critical
Antimony	Aluminum
Chromium	Asbestos
Coconut Shell Char	*Bauxite
*Diamonds, Industrial	*Copper
Manganese, Ferrograde	Cork
Manila Fiber	*Gasoline, Aviation (100 Octane)
Mercury	Glass, Optical
Mica	Graphite
Nickel	Hides and Skins
Quartz Crystal	Iodine
Quinine	*Iridium
Rubber (Including synthetic rubber)	*Jewel Bearings

Strategic	Critical
Silk	Kapok
Tin	*Nitrogen Compounds
Tungsten	Opium
	Phenol
	Platinum
	Tanning Materials
	*Teak
	Toluol
	Vanadium
	Wool
	*Zinc

NOTE: *Designated for purposes of procurement.
No symbol indicates unqualified designation.

REFERENCES

The following references have been carefully checked. They contain pertinent information necessary for completion of the statistical portion of this project. A few materials which could be readily produced in the United States with a little effort and time may not be included in them. The list may be modified to satisfy the local set-up.

1. *The Strategic and Critical Materials.* Prepared by the Commodities Division, Army and Navy Munitions Board, March, 1940. (Note: A leaflet was issued under date of October 1, 1941.)
2. *Minerals Yearbook,* 1940, Bureau of Mines, Department of the Interior, Washington, D.C. (Also see 1939.)
3. Klimm, Lester E., and Otis P. Starkey and Norman F. Hall, *Introductory Economic Geography,* Harcourt, Brace and Company, New York, 1940.
4. Van Valkenburg, Samuel, *Elements of Political Geography,* Prentice-Hall, New York, 1940.
5. *Commodities in Industry,* 1940, Commodity Research Bureau, Inc., New York.
6. *The 1941 Commodity Year Book,* Commodity Research Bureau, Inc., New York.

NOTE: "Suggested Sources of Information for Teachers and Students of Commerce and Economics" may be obtained without charge on application to The Business Information Service, Bureau of Foreign and Domestic Commerce, U. S. Department of Commerce, Washington, D.C.

THE OIL PALM IN MALAYA

GEORGE F. DEASY
Clark University

The oil palm (Eloeis guineensis) is one of the newest plantation crops in Malaya. While the earliest record of the introduction of the crop dates back to 1875, the palm remained an ornamental plant for many decades. It was only in 1917, following the development of successful palm culture in adjacent northeastern Sumatra, that the first plantation in Malaya was established.

The growth of the industry was rapid. The decline of rubber prices in the early twenties and the vastly increased post-war de-

TABLE I

ESTIMATED PALM OIL AND PALM KERNEL EXPORTS FROM MAJOR PRIMARY PRODUCING COUNTRIES, 1937
(millions of pounds)

Countries	Palm Oil	Palm Kernels*
Nigeria	322	753 (339)
Netherland East Indies	434	91 (41)
Belgian Congo	152	211 (95)
MALAYA	96	16 (7)
French West Africa	44	180 (81)
Other French Africa	40	145 (65)
Other British Africa	10	184 (83)†
Portuguese Africa	12	50 (23)

Source: International Institute of Agriculture.
* Approximate oil-content, in millions of pounds, in parentheses.
† Data for 1934.

mands for vegetable-oils both acted as powerful incentives for Malayan planters to develop the large-scale culture of the palm. Acreage occupied by the crop doubled and redoubled many times in the two decades, 1918-1938. Present Malayan oil palm acreage is 72,143 acres (1938).

Despite the late entry of British Malaya into the oil palm industry, that country today ranks fourth in the export of palm oil and eighth in the export of palm kernels among the primary producing countries of the world. (Table I) Only Sumatra, Nigeria, and the Belgian Congo surpass it in both respects.

In the economy of British Malaya, the oil palm ranks among the four leading crops of the country. Only rubber, rice, and coconuts are of greater significance from the standpoint of acreage. Since rice production is a native industry, the oil palm ranks third among the *plantation* crops of the country.

PRODUCING CENTERS

Most of the oil palms of Malaya are found on the west-coast lowlands of the peninsula. (Fig. 1.) Favorable environmental conditions as well as adequate rail facilities make this area well adapted

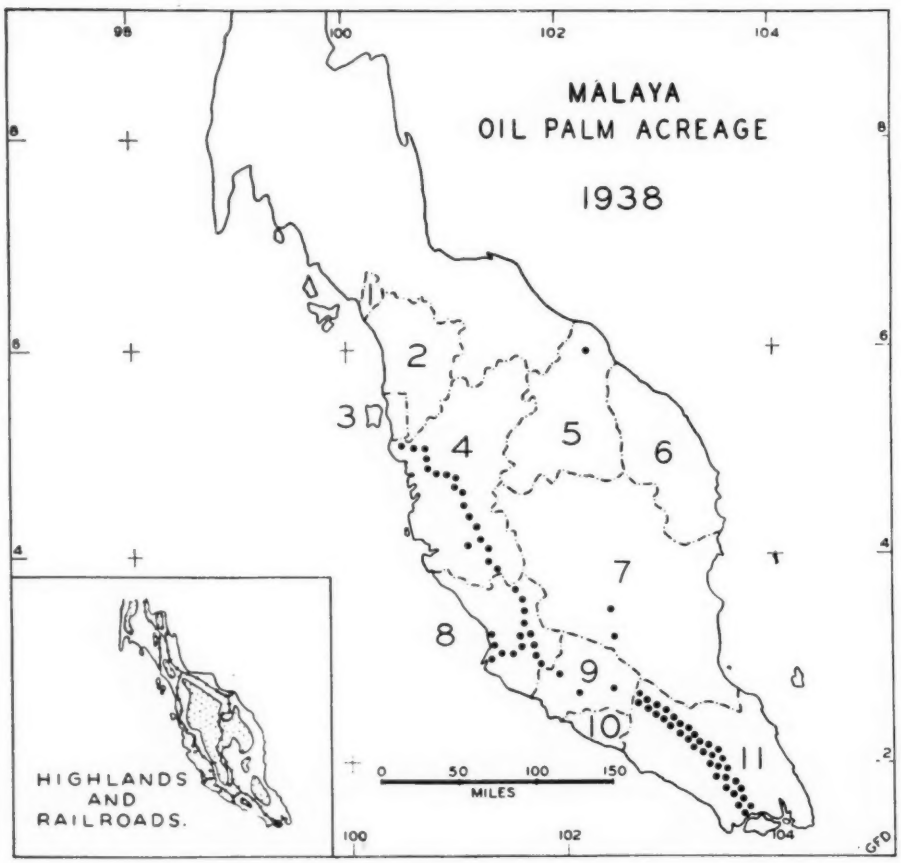


Fig. 1. Malayan Oil Palm Acreage, 1938. Each dot represents 1,000 acres, or major fraction thereof, planted to oil palms. The location of the dots approximates the actual distribution of palm acreage. A fractional part of the indicated acreage (about 17 per cent) consists of young, non-bearing palms.

The figures refer to political subdivisions, as follows: (1) Perlis, (2) Kedah, (3) Province Wellesley and Penang, (4) Perak, (5) Kelantan, (6) Trengganu, (7) Pahang, (8) Selangor, (9) Negri Sembilan, (10) Malacca, and (11) Johore. The Straits Settlement of Singapore is not numbered.

to palm production. Portions of the east-coast lowlands likewise are suited to the crop insofar as natural conditions are concerned, but until recent years they lacked rail transportation and their utiliza-

tion has been retarded. The highland interior of the peninsula is not adapted to the production of the palm.

The state of Johore has by far the largest acreage in palms, 34,946 acres. Two additional states with extensive areas planted in palms are Perak (18,038) and Selangor (14,570 acres). Until 1930 Perak had the largest acreage, but in the last decade it has yielded first place to Johore. Minor centers of production are found in Negri Sembilan (2,494 acres), Pahang (1,554 acres), and Kelantan (541 acres).

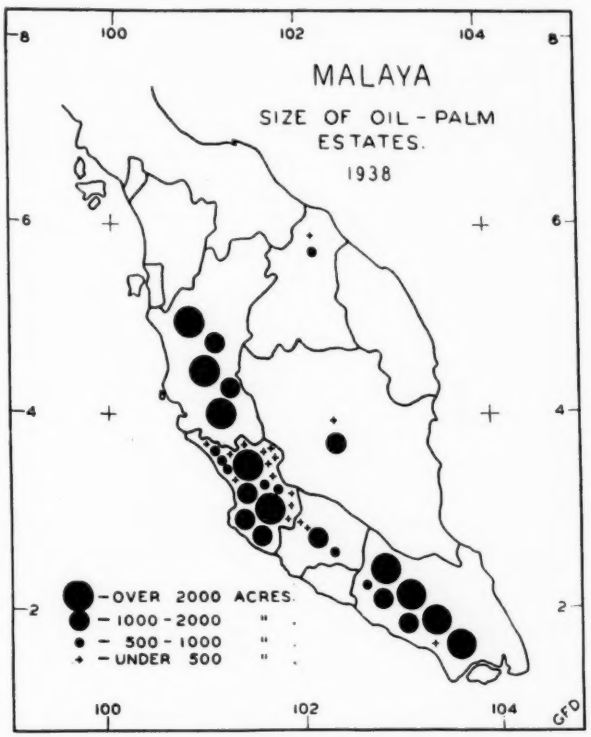


FIG. 2. Number and Size of Oil Palm Estates in Malaya, 1938. The symbols represent the total acreage (both bearing and non-bearing) planted to oil palms in each estate. The position of the symbols does not indicate the exact location of the individual plantations, but only their location within a given state.

The state of Selangor leads in the number of oil palm plantations, with 22 estates devoting a part or all of their acreage to the tree. However, most of these estates are relatively small (12 are under 500 acres each). Johore ranks second with 8 plantations, most of which are thousands of acres in extent. Perak, Negri Sembilan, Pahang, and Kelantan follow with 5, 4, 2, and 2 estates respectively. The number and relative sizes of the oil palm plantations of each state are shown in Figure 2.

CLIMATIC ADAPTABILITY OF WEST-COAST MALAYA TO THE OIL PALM INDUSTRY

Climatically, west-coast Malaya is well adapted to the oil palm industry.

Since the palm is a tropical plant it requires high temperatures

for growth. The optimum mean annual temperature is apparently about the same as that for cacao, namely 77° to 78°F. Night temperatures should not fall below 59°F., nor should day temperatures rise above 95°F.

The optimum amount of rainfall for the palm seems to be from 70 to 100 inches a year. There should be no prolonged dry period. Most favorable rainfall distribution exists when two long rainy seasons are separated by two short less-rainy seasons. Such periods of increased rainfall following upon comparatively dry spells apparently result in increased yields and produce a dual maximum in the annual output of fruit.

Since the oil palm is a light-demanding species and a large number of hours of sunshine is an essential requirement for the ripening and full development of its fruit, thundershower rainfall interspersed with long hours of sunshine is preferable to prolonged rains accompanied by overcast skies.

West-coast Malaya adequately meets all these climatic requirements. Annual average temperatures range from 77° to 80°F., and diurnal range remains well within the limits demanded by the palm. Annual precipitation averages between 75 and 150 inches, and is characterized by a double maximum in many sections. Thundershower rainfall prevails and the percentage of insolation is high.

SOILS UTILIZED FOR PALM PRODUCTION IN MALAYA

It was originally believed by Malayan planters that only a narrow range of soil types was suitable for oil palm cultivation. Later experience proved the palm to be quite cosmopolitan in its soil requirements, both from the point of view of parent material and chemical composition. The major requisites for suitable oil palm land appear to be: (1) sufficient depth and friability to enable the root system of the palm to develop normally (shallow and indurated lands are unsuitable), and (2) adequate drainage, since the roots of the oil palm are naturally restricted by a high water-table or an impervious sub-soil.[1]

The best soil for the palm is a friable clay sub-soil, covered with a deep, loose alluvial loam. This permits easy root penetration and adequate drainage, and at the same time retains sufficient soil moisture. Several of the interstream coastal-plain soils of western

[1] Such soils can be artificially drained, but this is an unwarranted expense in most instances while other more suitable lands are available.

Malaya, as well as certain alluvial areas, possess these characteristics and have shown excellent results. Oil palm plantings in Malaya are not limited to such ideal soils, however. Successful cultivation has been achieved on soils ranging from sandy loams to heavy clays, providing they are at least moderately deep, friable and well-drained.

ELEVATION AND RELIEF

While the oil palm is normally a lowland tree, it is occasionally found growing wild in Africa on decidedly hilly lands and at elevations up to 3,000 feet. Likewise, palms have been planted at elevations of over 1,000 feet in Malaya and Sumatra and they have prospered.

However, most oil palm plantations in Malaya are located on lands of low elevation and small relief, and estates are almost lacking in the higher, more rugged lands of the interior. This is a logical development in view of the fact that low, gently rolling lands are well suited to the palm without treatment, while on the higher, hilly lands suitable precautions must be taken from the beginning to prevent excessive soil erosion and to conserve soil moisture. Even after such elaborate measures are taken, it remains to be proven whether yields will be as high as those from palms growing on flat lands.

In certain instances, however, Malayan oil palm estates have been located in part on hilly lands. This is largely a matter of economic necessity rather than natural choice, since the advantages of a compact estate in close proximity to an established transportation system may more than compensate for the additional expenses and lower yields involved in the use of the hilly lands.

PESTS AND DISEASES OF THE OIL PALM

In comparison with the coconut palm, the oil palm in Malaya is remarkably free from natural enemies. No insects are as yet of significant importance and, except for stem-rot disease, the oil palm is unaffected by serious fungi attacks. This relative immunity of the oil palm, as compared with the coconut palm, may be due in part at least to the comparitively recent introduction of the former as a plantation crop in the Far East.

The principal diseases affecting the oil palm in Malaya at present are stem-rot disease, bud-rot, crown disease of young palms, and Marasmius disease of fruit bunches. Of these, only the first has caused serious damage. The two most frequently encountered

insects which have thus far caused damage are the red-stripe weevil and the black or rhinoceros beetle, both of which do great injury to the coconut palm. Among the remaining pests that occasionally affect the oil palm in Malaya are rats, wild pigs, and porcupines, all of which cause damage by eating the bud leaves of young palms.

Cultivation Practices on Malayan Estates

In developing or expanding a Malayan oil palm plantation, the oil palm seed are generally germinated in specially prepared seed beds. As soon as the seed-leaf appears, the seedlings are transferred to nursery beds. After 6 to 18 months (generally about 9 months) the young palms are planted during one of the wet seasons on land partially cleared of timber.

Since the average width of a mature palm on soil of ordinary fertility is 28 to 30 feet, the young palm plants are usually spaced 30 feet apart (55 palms to the acre). Closer spacing invariably results in stunted growth and reduced yields; wider spacing is unprofitable because of the additional cost of land and the added labor involved in tending the trees and gathering the fruit. The scheme of planting varies with the topography. On flat or gently undulating land, a standard triangular spacing of the trees is practiced as it allows maximum density of palms per acre (Figure 3). On land with an appreciable slope, on the other hand, planting along the contour is common since it not only reduces soil losses, but it facilitates routine care of the palms and harvesting by enabling the laborers to move with the contours rather than across them.

During earlier years, most slope lands in Malaya devoted to the oil palm were terraced. Recent low prices for palm oil have prevented the majority of estates from terracing new lands, and the general practice on hill lands today is to dig inexpensive "silt-pits" on the slopes at suitable intervals to catch the eroding soil.

The principal maintenance operations on Malayan oil palm estates are weeding, planting of cover crops and green manures, artificial manuring, prevention of soil wash, pruning of leaves, and occasionally artificial pollination.

Formerly, when the estates were better able to afford it, clean weeding was frequently practiced, with bullocks and occasionally tractors being used to pull the plows and harrows. Today, cultivation on most Malayan palm plantations is generally restricted to selective weeding at intervals of two to three months, with an occasional forking of the ground for a distance of several feet from

the base of the palms. An alternative procedure frequently followed is the cultivation of low-growing cover plants between the palms. Both of these practices are not only less expensive than the former clean-weeding process, but they are actually more desirable since they reduce soil wash and add appreciable humus to the soil.

The production of catch crops with oil palms is sometimes at-

Fig. 3. Eight Year Old Oil Palms Approaching Maturity. Note the triangular spacing of the trees and the low-growing cover crop. Courtesy of the Department of Agriculture, Federated Malay States.

tempted, but it is not generally practiced because the rapid growth of the palm makes such heavy demands on the soil that excessive fertilization becomes necessary.

No pruning of the leaves is attempted in the early growth period. After reaching the productive stage, however, the removal of the outer lower leaves becomes necessary for the proper development of the fruit bunches and their harvesting. (Figure 4) Experience has proven that the minimum amount of pruning consistent with adequate growth and easy harvesting of the fruit is desirable.

Too severe or too frequent pruning tends to weaken the palms and lower the yields.

During the developmental period in the Malayan palm industry artificial fertilization was seldom practiced, but with the increasing age of the palm trees the regular application of manures has become standard practice. This procedure was undoubtedly conditioned by the relative poverty and short productive life of most tropical soils. The addition of phosphates has especially shown good results. Applications of potash and nitrogen seem to produce little increase in yields. Manuring should become a progressively more important practice in the future, with the increasing age of many of the plantations.

FIG. 4. Close-up of a Young Oil Palm. This photograph shows how the lower leaves of the palm are pruned to facilitate the proper development of the fruit bunches and their harvesting. A few more leaves than normal have been removed to show the fruit. Courtesy of the Department of Agriculture, Federated Malay States.

A practice that is occasionally followed on Malayan oil palm plantations is artificial pollination. The wind rather than insects is the principal transporting agent of palm pollen, and it is often insufficient to ensure adequate fertilization. Artificial pollination, consisting of dusting a small quantity of fresh pollen on the female flowers, usually results in 15 to 150 per cent increase in yield. Certain disadvantages result from this practice, however. Production costs are higher and, what is more important, the palms are pushed to such extremes that they soon become exhausted and diminished yields follow. Consequently, artificial pollination is seldom employed today. Instead, other measures which increase yields such as manuring, selection of better strains of palms, and more intensive cultivation are generally used to stimulate production.

HARVESTING AND PROCESSING

Harvesting of the oil palm fruit usually begins at the end of the fourth year after planting in the field. The trees bear continuously

thruout the year, altho there are two periods each year when the yields reach a peak. These peaks are related to seasonal variations in the amount of rainfall.

The individual bunches of fruit usually require five and one-half to six months following pollination to ripen. As the fruit ripens the color changes from light green, to purple, to orange-red. The harvesting operations are performed by natives, who cut the fruit bunches from the palms with axes or pruning chisels and mallets. On some estates the laborers work alone, with each harvester having a definite group of trees assigned to him from which he collects the bunches and carries them to a central collecting spot. Other estates prefer to send out gangs of harvesters and carriers who co-operatively harvest a much larger area under the supervision of an overseer.

Both the quality and the yield of palm oil are affected by the degree of ripeness of the fruit when harvested. Only fully mature fruit should be picked. Underripe fruit contains a low percentage of oil in the pericarp (the outer pulpy layer); overripe fruit shows a considerable increase in the acidity of the oil. The importance of correctly timed harvesting is fully realized on Malayan estates, and collecting operations are conducted every seven or eight days.

In order to maintain the low free fatty acid content that characterizes the plantation palm oil of Malaya (and Sumatra), it is necessary to process the fruit immediately it is picked and to handle the fruit as little as possible before processing takes place. Any delay in treating the fruit or any bruising increases the acidity of the extracted oil and lowers its quality. As a result, most plantations have their own processing factories and special attention is paid to the problem of moving the fruit bunches from the field to these factories. Elaborate transport systems are usual on most estates in Malaya. Light railways equipped with special cars are particularly favored. Once these cars have been loaded in the field, no unloading of bunches is necessary until after sterilization (by heating) has taken place in the factory and further increase in acidity cannot occur.

The oil palm factories of Malaya are large barn-like buildings in which are housed the machinery that processes the palm fruit. This machinery performs numerous operations. It sterilizes the palm fruit (i.e., destroys the acid-forming enzymes in the pericarp), separates the fruit from the bunch stalks, removes the kernels from the pericarps, extracts the oil from the pericarps, and purifies the crude oil obtained. The refined oil is pumped to adjacent storage

tanks. The nuts and pericarp residue are separated. The nuts are cracked and the kernels extracted, cleaned, dried and bagged for export. The pericarp and nut residues are used as fuel in the factories and obviate the need for any other source of power.

THE "WAY OF LIFE" ON MALAYAN OIL PALM PLANTATIONS

Living and working conditions on Malayan oil palm estates are typical of those found on many other types of tropical plantations. Managerial duties on each estate are performed by one or more Europeans who are well-versed in the science of tropical agriculture. The physical work involved in planting and maintaining the trees, and in harvesting and processing the fruit, is done by Indian laborers.[2]

There is little seasonal change in the tempo and character of work on the plantations, since the uniform tropical climate results in a continuous growing and harvesting season. Planting (if the estate is expanding), cultivating, harvesting, and milling operations are carried on simultaneously, in marked contrast to the definite seasonality of farm work in middle latitudes. Because of this, the average laborer on an oil palm estate tends to become somewhat of a specialist in one line of work, i.e., he will do harvesting, or pruning, or some other single operation thruout the greater part of the year. Hence, he differs from the typical "farm hand" in the temperate zone, who follows thru with all the operations connected with the production of a given crop.

The laborers on the oil palm estates continue to use their primitive native implements for most of the agricultural operations. Estates that use European ploughs, tractors, cultivators and the like are the exception rather than the rule. The most popular digging, weeding, and cultivating instrument is the "chankol," a kind of broad hoe. Another widely used implement is the fork. Harvesting of the fruit bunches is done with a large chisel-like instrument and a mallet. The transport of materials about the estate (except for the harvested fruit bunches) is still very largely done with open baskets carried on the heads of the porters or by means of sticks across their shoulders. Only in the matter of transporting the ripe palm-fruit bunches to the factory and of processing the fruit has modern equipment supplanted the native tools.

[2] According to the 1931 Malayan Census, over 95 per cent of the workers employed on oil palm estates were Indians.

Work on the oil palm estates, as on the rubber plantations of Malaya, is performed by both women and men laborers. The remuneration paid the laborers is very low from the Occidental point of view, but, in common with other Malayan plantations, it is sufficiently high to maintain a standard of living that attracts additional tens of thousands of immigrants from India and China each year.[3]

MARKETING MALAYAN PALM PRODUCTS

During the early years of the industry, Malayan palm oil was exported in wooden barrels, which were assembled on the estates

TABLE II

MAJOR MARKETS FOR MALAYAN PALM OIL, 1932–38*

Year	United Kingdom	Canada	British India	United States	Others
1932	3,526	—	25	925	3,430
1934	7,641	5,000	143	50	3,145
1936	13,571	10,491	2,983	—	2,392
1938	31,087	18,748	2,606	—	2,099

Source: Department of Agriculture, Federated Malay States.
* There is almost no domestic consumption of palm oil in Malaya.

from staves made of California fir. The excessive leakage of oil from the barrels during transport, the high cost of the barrels themselves, and the large "dead weight" of the barrels during shipment made this an uneconomical procedure.

At first, the alternative of bulk shipment in tank steamers was unfeasible because of the small quantity of oil for export. However, production of Malayan palm oil increased rapidly, and bulk shipments were begun in 1931. Today, all Malayan palm oil is transported in bulk.

Most of the estates send their oil by rail (tank car) or coastal vessel to Singapore or Port Swettenham, where it is stored in large tanks. Since palm oil becomes a solid in non-tropical temperatures, the tankers that carry the oil to European and American markets are equipped with heating apparatus to enable the oil to be pumped from the holds.

The export of palm kernels presents no difficulties, the dried kernels merely being packed in sacks.

[3] Arrivals of Chinese immigrants in Malaya in 1934 numbered 109,267 and departures 69,129. Indian laborers from southern India numbered 89,828 and departures 28,168.

Since 1930, the major markets for Malayan oil palm products have been Britain and her colonies. Normally, Britain itself ranks first, with Canada a close second. India, Burma, and Egypt are other major markets. In contrast to its important position in the Sumatran palm oil trade, the United States buys very little of the Malayan product. (Table II)

MAPPING THE MONSOONS

T. W. BIRCH
Stourport, England

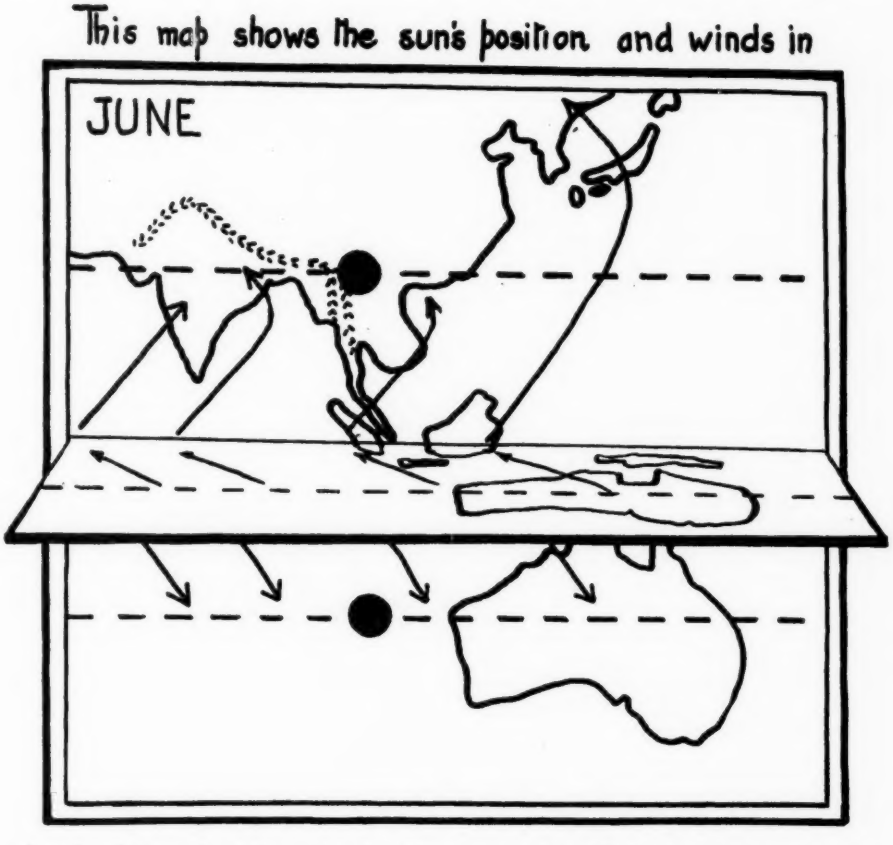
Probably most teachers when dealing with the Monsoons of Asia, take them in conjunction with the Monsoons and Trade Winds of Australia, demonstrating a certain symmetry about the Equator. A map is commonly drawn showing the position of the sun and the direction of the winds in June, and a similar map, with arrows turned round, to show the sun's position and winds in December.

A device which stimulates much interest, and therefore one which makes the teaching of the matter easy, consists of a simple arrangement by means of which the two maps take on almost an optical illusion of change with the seasons. Experience with the device shows how much more effective it is than when separate maps are drawn facing each other. The arrangement is illustrated in the sketch.

The pupil first traces in his note book a map of Asia and Australia bounded by the lines 45°N., 45°S., 60°E. and 165°E. The rectangle so formed is symmetrical about the Equator. He then cuts along the boundaries of the top half of the map, and creases the flap along the Equator. This is shown in perspective in the sketch. When the flap has been creased flat back, the map is traced again within the rectangle. Half is on the back of the flap, and half on the page beneath the original map. The two pages are then stuck together or wired with a stapler, so that a flip with the finger moves the flap only, and reveals first one map, then the other. The position of the arrows representing winds is then carefully copied from the blackboard. The only difference on the two maps should be the position of the arrow tips. The sun's position is then marked for June on one map and for December on the other. The writer makes it a point that all maps should bear a caption

beginning "This map shows . . .", and in this case, if printed above the map, the appropriate word JUNE or DECEMBER can be inserted within the rectangle and the illusion of change which the device gives if neatly executed, is greatly aided.

If pupils have colored pencils, coast lines may be drawn in blue, Tropics in yellow, sun and Equator in red, and the rectangle



edged with red. All such sketch maps should be in color. Arrows can be drawn either in a single color, or with a change of color as they cross the Equator.

Points to teach or emphasize depend upon the age and previous work of the class. Among others could be brought out the fact that the sun shines overhead all along the Tropics and not simply at the points marked on the maps; that the earth's rotation gives rise to wind deflection but direction is influenced also by the marked alternation of high and low pressure over Asia; that there is a

certain symmetry of wind belts about the Equator, modified by the existing distribution of land and sea; that the word Monsoon has two meanings—in South-East Asia it means seasonal, and is applicable equally to summer and winter winds, but elsewhere it is applied to a Trade Wind which has crossed the Equator and become deflected, hence is a feature of summer only; that to describe the monsoons of South-East Asia as South-West or North-East is misleading—they are rather in-blowing and out-blowing, summer and winter, or less accurately, wet and dry monsoons; and finally the effective nature of the Himalayas as a climatic barrier might be discussed and their position marked. When such points as these are mastered, ground is prepared for more difficult work on other continents.

Thus the pupil learns by doing. Cutting a page of the book appeals as rather novel. A plaything has been made which is always at hand when other pages are too dull to look at, and as the pupil plays, he learns. One other point—if examinations in America are anything like those in England, the monsoons of Asia are sure to come, and the examinee is delighted with an easy kill.

EDITORIAL NOTES AND NEWS

WE ARE AT WAR—a great world struggle from which will emerge forces that will dominate human life, either in the form of dictatorships or in rejuvenated and altered democracies. One or the other type of control will rule the world for many generations to come. Motivating the struggle is the human desire to attain a higher level of well-being for individuals and for society. Recognition of the importance of natural, material resources and their geographical distribution in attaining that desired level of well-being, is far more widespread at present than at any time in the past. Today, maintenance of modern life standards, either in peace or in war, depends upon the use of material resources. A brief survey of the world shows that essential resources are very unequally distributed; that some nations have an abundance of vital materials of high quality; that some have very few materials of basic value in the development and maintenance of industry; that no nation is entirely self-sufficient. An excellent project, for any group of students, would be evaluation of the material resources of the nations at war, and consideration of some of the problems arising from the situations found to exist. What are the critical and strategic materials in our own country? How can our needs be supplied? Our critical and strategic materials will be discussed in an early issue of the JOURNAL.

Word has come to the President of the National Council of Geography Teachers that the Florida State Council has had a year of highly successful activity under the presidency of Miss Mary Bostick (Caroline Brenard School, Tallahassee). Thru the efforts of this group of educational leaders it seems likely that the high schools of the state will have more and better geography in the near future. Geography now appears on the list of elective subjects and is taught in many Florida high schools. Recently the state council has succeeded in having geography requirements added to the certification list and has secured the adoption of a modern up-to-date textbook for high-school use.

Recognizing the vigor of the Florida Council of Geography Teachers, the State Department of Education has appointed Miss Bostick and Mrs. Annice Davis Elkins (Tarpon Springs) members of a research committee to investigate and recommend for classroom use the best available audio-visual aids such as globes, maps, charts, and sound films, the findings of the committee to be published as a bulletin. In connection with their work on this committee, Miss Bostick and Mrs. Elkins will be at the University of Florida for six weeks this coming summer, assisting in the organization of a "workshop."

DR. WALTER W. RISTOW, Chief of the Map Division of the New York Public Library, has planned a special map exhibit on the Western Hemisphere, for the meetings of the National Council of Geography Teachers and the Association of American Geographers, to be held in New York City during the Christmas holidays. The exhibit will be in the Public Library and will illustrate the cartographic evolution of this hemisphere during the past four hundred and fifty years, and will include many of the rare maps and atlases possessed by the Library, as well as the famous Lenox Globe, earliest known post-Columbian globe.

Also of interest is the Stokes' Collection of rare maps and prints of early New York City, on permanent display in the third floor corridor.

Visiting geographers are cordially invited to visit the Library at Fifth Avenue and Forty-second Street during their stay in New York.

DR. GEORGE B. CRESSEY, Chairman of the Department of Geology and Geography at Syracuse University, spoke before the North Central Indiana Teachers Association in

South Bend on October 24. In the morning he discussed "The Use of Maps in the Study of Current Events" and in the afternoon presented an illustrated lecture on "Far Eastern Geographic Strategy." The latter is also the subject of a Littauer Lecture at Hunter College in New York City on November 13.

What is said to be the largest windmill in the world has recently been erected on one of the Green Mountains of Vermont known locally as Grandpa's Knob. The tower is 110 feet high and has two stainless steel propellers weighing 22 tons with a wing spread of 175 feet. These blades will turn a turbine shaft operating a generator. Various devices are supposed to take account of uneven air currents and produce a steady flow of power under all circumstances. A wind velocity of four miles an hour will cause the turbine to rotate, but its service will be confined to velocities ranging between 18 and 60 miles an hour. Structural designs has had to provide for velocities as high as 140 miles an hour, together with lightning discharges, and winter ice. Then, too, the site had to be one of sparse settlement where damage to property and loss of life would be a minimum in case of accidents. At the same time, the site had to be reasonably close to a public utility system willing to take the electric current developed as an auxiliary to steam or water power. The wind turbine is estimated to be available about one-third of the time. The project is designed to ascertain whether wind as a source of power is commercially practicable and what engineering knowledge and design is necessary for economic operation. Also, nearby is a project for an exhaustive study of winds which features a mast 180 feet high, with wide ranging arms which will support 19 anemometers registering wind velocities at five different levels. If the wind turbine proves to be economically practicable other windmills will be erected nearby or on duplicate sites.

According to the Automobile Manufacturers Association, there are about three and a fourth million miles of streets, state and local highways in the United States. Over these highways go the motoring vacationists who in the past year will have spent in the neighborhood of five billion dollars, according to the American Automobile Association. Since most of these motorists have cars capable of going faster than their owners care to drive them, the car manufacturers are paying less attention to increased speeds and, instead, are concentrating on lines of greater comfort and smoother performance.

According to the Federal Power Commission, the average daily production of electric energy in 1940 from fuel power was about twice that from water power. That from fuel totaled 309,627,000 kilowatt-hours, while that from water power was 154,210,000 kilowatt-hours.

Last spring the Census Bureau completed the area measurement of the United States as a supplement to the 1940 Census. This is the first basic remeasurement made since the one prepared by Henry Gannett for the Census of 1880. The new area is 3,022,387 square miles, a net reduction of 4,402 square miles. No state escaped alteration of its accredited area. For the United States, there was an increase in land area and a decrease in inland water area, the latter being most notable in the elimination of much water area claimed by coastal states.

Since all cork used in the United States must be imported and since there are no substitutes for cork in certain production fields, cork supplies for defense needs have priorities over civilian needs. All our cork comes from the Mediterranean countries.

Portugal's production is usually twice that of Spain and together they furnish about 70 per cent of the world's supply. Attempts have been made to grow the cork oak in California with the result that about 5 tons of cork were gathered there in 1940 and new plantings are being promoted. About 60 per cent of our imports of cork are used in insulation, such as corkboard, cork pipe covering, and granulated cork for loose-fill insulation. Nearly 30 per cent is used for composition products, such as washers, gaskets, and oil seals. Thus far, imports for 1941 have almost equaled those of the same period of 1940, but a shift in the war to Spain and Portugal or a more intensive war in the Atlantic might curtail seriously our future needs.

Last September an experimental plant of the United States Bureau of Mines started processing manganese ore taken from the deposits in the 60-mile field along the Missouri River at Chamberlain. The ore is taken from open pits, crushed, dried in a rotating steel oven, and the nodules of high grade ore separated from the waste by screening and washing. The plant has a capacity of 500 tons a day. A second experimental plant of half that capacity is being constructed nearby, using compressed steam to separate the ore nodules from the waste. The processed ore is to be sent to government refining plants probably at Boulder and other western centers. The Chamberlain field is classed as an emergency source of supply due to the high production cost as compared with that of overseas ores.

The Geography Section of the Maryland State Teachers Association met in October in Baltimore. The principal speaker was Dr. Franz Michael, Director of the Page School of International Relations, formerly professor at the National Chekiang University, Hangchow, China.

Aralac is the name given to the new fiber made from casein, a by-product of milk. This fiber is being blended with wool, cotton, rayon, or fur and made into fabrics of unusual beauty. Its use as a wool substitute is of special significance to those dairy farmers who may have found it difficult to find a market for the skim milk not needed on the farm.

Last year more than 150,000 sharks were brought into San Francisco harbor. Most of them were caught on hooks attached to heavy lines. At least 600 vessels in the sharking industry operated in California waters, while many others operated in the Gulf of Mexico and the Caribbean. Only a few years ago, sharking was not a lucrative industry. Now with the improvements in the techniques of skinning sharks, preparing their hides, and finding new uses for the by-products, the industry is on the up swing, netting several millions of dollars of returns. The outer skin to too rough, so only the layer below it is used for leather. The sharks vary greatly in size; the average shark yields in addition to its hide about three gallons of shark-liver oil, 2½ pounds of fins for soups, 150 teeth useful for ornaments and buttons, and the remaining carcass may be reduced to shark meal for fertilizers. Some shark meat is used for food. The future of the industry apparently depends upon finding added uses for the by-products.

The 1941 award of the title of "Star American Farmer" went to 18-year-old Duane Munster of Nebraska, one of the 250,000 members of The Future Farmers of America. His farm projects brought him $5,624 during his high school days.

GEOGRAPHICAL PUBLICATIONS

R. H. Whitbeck and V. C. Finch. **Economic Geography.** 615 pp., 23 pp. maps, charts, index. McGraw-Hill Book Company, New York City, 1941. $3.50.

Economic Geography, by Whitbeck and Finch, has reached its fourth edition. This fact attests the continued popularity of this well-known book.

For the most part, the fourth edition retains the general plan of organization of the earlier editions; Part I. (pp. 11-312) discussing the United States and Canada and Part II (pp. 315-615), the rest of the world. Part I is organized on the basis of economic products of the country; Part II chiefly on regional basis.

The revision has been quite thoro, and has increased considerably the usefulness of the text. Apparently all statistics have been brought as near to date as possible. Altho some of the chapter titles, particularly in the part dealing with United States and Canada, are the same as in the earlier editions, there has been considerable revision in them. Several of the chapters have been entirely re-written and the others have been revised by additions of useful paragraphs and by insertion of maps, graphs, pictures, and tables.

The revision of the chapters on Europe and Asia is more extensive. In them a geographic basis is used more extensively than in the earlier editions. The authors might well have gone further in this respect, however, than they did. Since Europe is in a political upheaval and will likely be in a state of political instability for a long time, geography teachers are in general organizing their work on Europe on the basis of land-use regions. The revision of the chapter on U.S.S.R. (called Russia in older editions) is the most noteworthy. In it there is no separation of Europe from Asia. The section on industrial development of U.S.S.R. is a real contribution.

There is also a distinct improvement in the chapters dealing with the rest of Asia. The change of one chapter title, from "The Republic of China" to "China," significantly and typically indicates a trend in the book of less political and more geographic emphasis.

The book is too well known for a need here to mention its purposes and the places where it might be used. All that need be said is that the 1941 edition is to be used as were the earlier editions, but it performs its functions in distinctly better fashion. Especial emphasis should be given, however, to the great usefulness of the book as a general geographic reference. Placed in a general library it will be referred to by teachers of economics and history as well as by geographers.

WILLIAM J. BERRY

Western Michigan College

Frances Carpenter. **Our Little Friends of Switzerland, Hansli and Heide.** 224 pp. Illustrated. American Book Co., N.Y. 1941.

A supplementary reader for the lower elementary grades. It relates the day-by-day activities of a Swiss boy and girl living on a farm on an edge of a valley village. The parents, near relatives, and teacher of the children, together with a village clockmaker and lame boy, relate the folklore that is the background of their way of life. They also take the children to the alpine pastures, to a factory processing cacao beans into chocolate, and to another making cheese. Their holiday is a trip to Bern.

Edgar Bruce Wesley. **Reading Guide for Social Studies Teachers.** 158 pp. Bulletin No. 17. The National Council for the Social Studies, 1201 Sixteenth St. N.W., Washington, D.C. 1941. 50 cents.

The descriptive comments in the annotations of each publication listed are so informative that teachers should find this book of great help in selecting readings for their own professional growth. The publications were selected from lists submitted by the author to his colleagues at the University of Minnesota in history, political science, economics, sociology, geography, anthropology, and education, each of whom picked the ten or twelve best publications in their respective fields published since 1930. Each was examined by the author in the light of their value to social studies teachers, and the present guide was thus formulated. Professor Wesley lists a number of sources of additional publications, and suggests ways of using books effectively. He also adds lists for minimum libraries in each field of learning.

Griffith Taylor. **Australia—A Study of Warm Environments and Their Effects on British Settlement.** 455 pp. Illustrated. E. P. Dutton & Co., N.Y. 1940.

Dr. Taylor's *AUSTRALIA* is one of the most complete and authoritative geography texts available on the continent of Australia. In the best British and Taylor traditions he has started deep in the ground and far back in the history of the continent for the bases of his geographical analysis. On his broad and deep geographical and historical foundations, Dr. Taylor presents a thoro study of the climates, vegetation, and human adaptations of the Dominion as a whole and follows that with a detailed interpretation of the various geographic regions.

The text is well supplied with the type of thought-provoking diagrams for which the author is justly famous. Eight well produced photographs represent a cross-section of the vegetation thru southern Australia.

The part of Chapter XVII dealing with New Zealand is the least satisfactory portion of the whole book. By contrast with the thoro detail of the rest of the book, the superficial treatment of that section is very disappointing. One would question first, the need for including a chapter on New Zealand in a book dedicated to the study of Australia. Separated by 1200 miles of Tasman Sea and possessed of distinct political identity the smaller Dominion is not a proper subject for treatment in a volume with the purpose of this book. If the author feels that the two Dominions belong together in his text, then one must question the division of space and thoroness of detail devoted to each.

Physically, the book offers a very compact and interesting appearance. As a classroom text it meets the standards of British schools much more completely that it does the textbook standards of American schools. However it is a book that will fill a definite need in both our school and public libraries.

A. K. BOTTS

State Teachers College
Trenton, N.J.

Bernhard Ostrolenk. **Economic Geography.** 803 pp., 243 photographs and maps. Richard D. Irwin, Inc., Chicago, Ill. 1941. **$4.00.**

From the appearance, recently, of several textbooks on economic geography written by economists rather than geographers, one may draw one of two conclusions: perhaps the subject offers a market too tempting to be resisted; or publishers, having determined to issue series of geography texts, take manuscripts whether they are geography or not. In either case the result is unfortunate, because teachers without special training in the subject, who find themselves faced with a course entitled "economic geography," have no way of determining which of the numerous up-to-date texts having that name are geography, and which are merely so titled.

A geographer is known by his maps. There are few, if any original maps in the

volume under discussion. Many of those reproduced come from sources which are by-words for the unreliable in cartography. And they have not been improved in the redrafting. Outstanding horrible examples are those misplacing the railway lines of the United States. Until now, such crude and misleading cartography has appeared only in the work of German propagandists of geopolitics.

The text bears out the maps. One dips into it nearly anywhere, only to be confronted by masses of figures (not in tables). The natural environment is dismissed in chapters 2 and 3 and apparently is not referred to again. Certainly nothing is said to show its relation to the commodities and businesses which make up the remainder of the subject matter. (Historians have frequently made similar opening bows in the direction of geography, only to forget all about it, but they don't label their product "geography.")

The "Review Questions" that close the chapters totally lack geographic quality. None asks "where" anything is, to say nothing of demanding an answer to the "why" of the "where."

The bibliography contains names of a few geographers, among many who are not. Their cited works appear to have left no impression upon the author.

DERWENT WHITTLESEY

Harvard University